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Tijuana, Baja California. February 27, 2003.

Ing. Miguel Ávila Niebla
Director General
Comisión Estatal de Servicios Públicos de Tijuana
Blvd. Federico Benítez No. 4057, Colonia 20 de Noviembre,
Tijuana, Baja California C.P. 22430

Subject: Potable Water and Wastewater Master Plan for the Municipalities of Tijuana and Playas de Rosarito – Final Report

Dear Ing. Ávila:

CDM is pleased to provide you with eight (8) copies in Spanish, and eight (8) copies in English of the Potable Water and Wastewater Master Plan for the Municipalities of Tijuana and Playas de Rosarito. Included are also the corresponding executive summaries in both languages.

In addition to the Master Plan repots, we are providing you with 8 electronic copies in English and Spanish, and 2 copies of the environmental reports for compliance with Mexico and the United States applicable environmental laws.

Eight copies of the Executive Summary for the Municipality of Playas de Rosarito are also included, with their corresponding electronic files. Additionally, our project electronic files are included in a CD for your use.

Please do not hesitate to contact me should there be any questions.

Sincerely,

Enrique López Calva
Project Manager
Camp Dresser & McKee Inc.

c.c.p. Hermila Tinoco Tellez - CESPT
c.c.p. Erik Schlebach - NADBank
c.c.p. Wendi Shafir – U.S. EPA
c.c.p. File

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Introduction

1.1 Background

With a population of approximately 1.4 million, the cities of Tijuana and Playas de Rosarito make up one of the largest metropolitan areas in Mexico. This region also has one of the highest population growth rates in the country. The rapid growth of this area presents a great challenge for the State Commission of Public Services of Tijuana (*Comisión Estatal de Servicios Públicos*, CESPT) to provide public services.

Large engineering projects such as the Abelardo L. Rodriguez reservoir, the Río Colorado-Tijuana Aqueduct, the Punta Bandera Wastewater Treatment Plant, and the wastewater conveyance system have been necessary to accommodate the growth and facilitate economic prosperity in the region. During the 1980s and 90s, CESPT has invested in the improvement of infrastructure in the areas of potable water, wastewater collection, and sanitation.

Accelerated growth, accompanied by scarce water resources, requires significant short-term investments to ensure the supply of water to Tijuana and Playas de Rosarito. Besides, CESPT needs to supply additional wastewater collection and sanitation services in the future since current investments in these areas will only address the problem of collection systems and sanitation services for the short term. To eliminate or significantly reduce discharge into the Tijuana and Alamar Rivers, and to protect the quality of receiving waters in the region, additional investments will be necessary.

The topographic characteristics of the Río Tijuana basin that the city shares with the United States create problems in providing services to many areas, in addition to the challenge of eliminating transborder impacts. However, sharing the Río Tijuana basin with the United States also provides an opportunity to find creative solutions binationally in terms of water and wastewater projects.

For these reasons, CESPT recognized the need to develop a master plan with appropriate planning tools to evaluate current conditions, identify shortfalls and find solutions, optimize existing resources, explore new opportunities, and provide a strategy to guide short, medium, and long-term investments.

The Potable Water and Wastewater Master Plan for the Municipalities of Tijuana and Playas de Rosarito (master plan) provides a programmatic plan for the next 20 years. Its goal is to orient today's investments according to a vision of the future as seen by CESPT, regulatory agencies of Tijuana and Playas de Rosarito, and the government of the state of Baja California. The plan is a tool to assess present conditions, evaluate future conditions, and make recommendations for investing in sustainable projects that are acceptable to the public and regulatory agencies.

1.2 Project Objectives

The overall project objective is to produce a dynamic document that presents an integral strategy for water and sanitation services in the study area. This will allow CESPT to collaborate in meeting the needs of public health, quality of life, and environmental protection for present and future generations.

Specific objectives include obtaining and validating information about physical, demographic, and environmental conditions in the study area. Demand projections for services are also necessary to analyze sources of supply, potable water, wastewater collection, and sanitation systems.

In addition, a prime objective of the study is to identify and develop alternatives to eliminate present and future deficits projected for sources of supply and potable water, wastewater collection, and sanitation systems. The potential for treated wastewater reuse is also evaluated.

Another objective of the master plan is to perform an environmental assessment in accordance with the guidelines of Mexican law as well as those of the National Environmental Policy Act (NEPA) of the United States.

The purpose of the study is to develop a plan to invest in projects to improve services of potable water, wastewater collection, sanitation, and wastewater reuse in the short-term (5 years), mid-term (10 years), and long-term (20 years).

1.3 Report Organization

The report contains 16 sections that generally follow a typical planning process from the beginning. Section 2 is a compilation of existing information, a task which formed the basis of the initial planning stages.

Section 3 of the plan is an assessment of the present condition of water resources, potable water, wastewater collection, sanitation, and wastewater reuse systems.

Section 4 is a description of the methodology used to make decisions in the master plan, based on principles of sustainable development described in guidelines of the Border Environment Cooperation Commission (BECC).

Section 5 presents demographic, commercial, and industrial growth projections.

Section 6 includes service demand projections based on growth forecasts and present capacities of the different systems.

Sections 7 and 8 present the infrastructure requirements for both water resources (including water treatment) and sanitation in the study area. These sections outline the alternatives for meeting future demands on those systems.

Section 9 presents how the master plan integrates the water and sanitation alternatives outlined in the two previous sections and gives a detailed description of each alternatives evaluated in the plan.

Sections 10 and 11 present the infrastructure requirements for the potable water and wastewater collection systems. These requirements are based on present need and on projected deficits, taking into account each of the alternatives described in Section 9.

Section 12 is one of the most important sections in the report. This part describes the integrated alternatives in detail and prioritizes them, in order to produce a list of three alternatives that best meet the objectives of CESPT, as well as the alternative that has the greatest potential.

Section 13 describes environmental documents prepared in conformance with Mexican and United States regulations.

Section 14 contains the investment plan, based on the best alternative according to the analysis in Section 12.

Section 15 describes institutional and legal issues relevant to the plan's implementation, defining important areas for future study.

The plan concludes with Section 16, which presents a follow-up and control plan.

1.4 Important Considerations

The master plan was developed within a framework of cooperation between several Mexican, United States, and binational agencies. The plan was prepared with collaboration and supervision of a Binational Technical Committee (BTC), composed of CESPT, the United States Environmental Protection Agency (EPA), the North American Development Bank (NADB), the National Water Commission (CNA), and the Baja California State Water Commission (CEA). The BTC was a decision-making body and it established conditions and basic planning assumptions. Some relevant issues are described below.

The base year of the study is 2001, since this was the closest year for which a 12-month record existed at CESPT. However, the final year of the plan is the year 2023 because 2003 will be the first year of the plan's implementation. Demand for potable water was also projected for the years 2030 and 2040.

Sources of demographic, socioeconomic, and land use information came from city, state, and federal agencies. Analyses and projections found in the master plan are based on official sources as well as important binational agreements.

The master plan contains important and basic considerations for planning. One consideration is that the potential expansion of the South Bay International Wastewater Treatment Plant (SBIWTP) in San Diego was outside the scope of the

study. However, CESPT should recognize that technically, the expansion of that plant is feasible and may present some advantages, although it would require significant binational negotiations and agreements.

In terms of infrastructure the plan assumes the following baseline conditions:

Baseline infrastructure: It is defined as the existing system in its current condition, plus infrastructure not yet in operation, but in process of being designed or constructed (defined by CESPT):

- Tijuana Sana (Tijuana Sewer Rehabilitation Project)
- Crédito Japonés Projects
- Rosarito System 2 for potable water
- Integral Development Tijuana River Wells
- Expansion of 1.3 m^3/s to the existing aqueduct
- Water losses control program
- Delivery of water from the United States to Mexico (short-term)
- Interconnection of aqueducts on both sides of the Tijuana River
- Expansion and upgrade of the San Antonio de los Buenos Plant

The plan also includes references to *Public Law* 106-457, *Estuaries and Clean Waters Act of* 2000, Title VIII, *Tijuana River Valley Estuary and Beach Cleanup.* This law and the analysis included in the plan that is relevant to the law are described mainly in Sections 8, 9, and 12.